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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,158	02/16/2001	Stephan W. Wegerich	7060/70479	1544

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FITCH EVEN TABIN AND FLANNERY  
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CHICAGO, IL 60603-3406

EXAMINER
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GUILL, RUSSELL L

ART UNIT	PAPER NUMBER
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2123

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07/28/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/784,158	<b>Applicant(s)</b> WEGERICH ET AL.	
	<b>Examiner</b> Russ Guill	<b>Art Unit</b> 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21,25-28,31-37,50 and 51 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21,25-28,31-37,50 and 51 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 April 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. This action is in response to the Amendment filed May 12, 2008. No claims were added or canceled. Claims 1 – 21, 25 – 28, 31 – 37, and 50 – 51 are pending and have been examined. Claims 1 – 21, 25 – 28, 31 – 37, and 50 – 51 have been rejected. **Claims 7 and 37 are allowable over the prior art of record.**
2. This Office Action is NON-FINAL due to new rejections with new art.

### *Response to Applicant's Remarks*

3. Regarding independent claims 1, 8, 13, 26 and 32 rejected under 35 USC § 103:
  - 3.1. Applicant's amendments and arguments have been fully considered, and are persuasive.

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4.1. Claims 1 – 21, 25 – 28, 31 – 37, and 50 – 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4.1.1. Regarding independent claim 1, the claim recites, "to form an ordinal count". The term "ordinal count" does not appear to be defined in the specification, and the meaning of the term is unclear. The metes and bounds of the claim cannot be determined.

4.1.2. Regarding independent claims 8, 13, 26 and 32: the claims all recite "an ordinal count", and are rejected for the same reason as claim 1 above.

4.1.3. Dependent claims inherit the defects of the parent claim.

*Claim Rejections - 35 USC § 101*

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5.1. Claims 1 – 7, 13 – 21, 25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

5.1.1. Regarding independent claims 1 and 13, a valid process under 35 USC § 101 must either 1) transform underlying subject matter, or 2) be tied to another statutory class, such as a particular apparatus. In order to qualify as a statutory process, the claim should positively recite the other statutory class to which it is tied, for example by identifying the apparatus that accomplishes the method steps. A mere recitation of a computer in the preamble does not appear to be sufficient to tie a process to a particular apparatus. Dependent claims are rejected similarly.

*Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. The claims have been rejected above under 35 USC § 112, second paragraph, as vague and indefinite. A claim interpretation would require considerable speculation about the meaning of terms employed in a claim or assumptions that must be made as to the scope of the claims. Therefore, a claim interpretation is not made, and the claims are treated below as best understood by the Examiner.

9. Claims 1, 4, 6, 8, 11, 12, 13, 14, 15, 17, 26, 27, 31, 32, 34, 36, 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black (Black, Christopher L.; Uhrig, Robert E.; Hines, J. Wesley; "System Modeling and Instrument Calibration Verification with a Nonlinear State Estimation Technique", Maintenance and Reliability Conference Proceedings, May 12 - 14, 1998) in view of Dougherty (James Dougherty et al., "Supervised and Unsupervised Discretization of Continuous Features", 1995, in "Machine Learning: Proceedings of the Twelfth International Conference" ed. Armand Frieditis and Stuart Russell, Morgan Kaufmann Publishers, nine unnumbered pages).

9.1. The art of Black is directed toward system modeling and instrument calibration verification with a nonlinear state estimation technique (Title and Abstract).

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9.2. The art of Doughtery is directed to discretization of features in machine learning (*Abstract*).

9.3. The art of Doughtery and the art of Black are analogous art because they both pertain to training an adaptive model.

9.4. The motivation to use the art of Doughtery with the art of Black would have been the benefit recited in Doughtery that equal interval width discretization is the simplest method of discretization (*section 2, first paragraph*), which would have been recognized as a benefit by the ordinary artisan.

9.5. Regarding independent **claims 1, 8, 13, 26 and 32**:

9.6. Black appears to teach:

9.6.1. receiving signals as input from a plurality of sensors as a set of training vectors (*especially pages 58.05 - 58.06, sections "Instrument Calibration Verification System" and "Demonstration of Application of nset to modeling of selected high flux isotope reactor (hfir) variables"; please note that the variables are time-correlated; and pages 58.01 - 58.02 section "Introduction"; please note that prototype vectors form an empirical model*);

9.7. Black does not specifically teach:

9.7.1. ordering the set of training vectors according to a corresponding value in each vector of a particular sensor to form an ordinal count of vectors representing the 'x' dimension of the data;

9.7.2. dividing the set of training vectors according to equally spaced ranges selected across the magnitude of the data, the magnitude forming the 'y' dimension of the data;

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9.7.3. selecting at least one vector from each of the equally spaced ranges for training the adaptive model;

9.7.4. training the adaptive model with the vectors selected in the selecting step.

9.8. Dougherty appears to teach:

9.8.1. ordering the set of training vectors according to a corresponding value in each vector of a particular sensor to form an ordinal count of vectors representing the 'x' dimension of the data (*especially fourth page, section 3.1 Equal Width Interval Binning*);

9.8.2. dividing the set of training vectors according to equally spaced ranges selected across the magnitude of the data, the magnitude forming the 'y' dimension of the data (*especially fourth page, section 3.1 Equal Width Interval Binning*);

9.8.3. selecting at least one vector from each of the equally spaced ranges for training the adaptive model (*fifth page, section 4 Results; the classifiers were trained using the vectors*);

9.8.4. training the adaptive model with the vectors selected in the selecting step (*fifth page, section 4 Results; the classifiers were trained using the vectors*).

9.9. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Dougherty with the art of Black to produce the claimed invention.

9.10. Regarding claims 4, 11, 34:

**9.11. Black does not specifically teach:**

**9.11.1.** ordering the set of training vectors according to the magnitude of the particular sensor.

**9.12. Dougherty appears to teach:**

**9.12.1.** ordering the set of training vectors according to the magnitude of the particular sensor (*especially fourth page, section 3.1 Equal Width Interval Binning*).

**9.13. Regarding claims 6, 12, 36:**

**9.14. Black does not specifically teach:**

**9.14.1.** ordering the training vectors so as to provide a cumulative density function for the particular sensor.

**9.15. Dougherty appears to teach:**

**9.15.1.** ordering the training vectors so as to provide a cumulative density function for the particular sensor (*second page, section 2 Related Work, first paragraph that starts with, "The simplest . . .", "A related method, Equal Frequency Intervals, divides a continuous variable into  $k$  bins where (given  $m$  instances) each bin contains  $m/k$  (possibly duplicated) adjacent values"; the equal frequency interval bins form a cumulative density; please also see Vaidyanathan, column 10, lines 5 - 12*).

**9.16. Regarding claim 14:**

**9.17. Black appears to teach:**

**9.18.** identifying dominant driver parameters (*page 58.06, first paragraph; please also see Wong, page 389, right-side column to provide common knowledge in the art*).

**9.19. Regarding claim 15:**

**9.20. Black does not specifically teach:**



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9.20.1. selecting a bin number, said bin number being used in binning step d) said bin number determining the number of bins in which the plurality of vectors is divided.

9.21. Dougherty appears to teach:

9.21.1. selecting a bin number, said bin number being used in binning step d) said bin number determining the number of bins in which the plurality of vectors is divided (*especially fourth page, section 3.1 Equal Width Interval Binning*).

9.22. Regarding claim 17:

9.23. Black does not specifically teach:

9.23.1. said system vectors are ordered in step b) in ascending magnitude order for said selected parameter.

9.24. Dougherty appears to teach:

9.24.1. said system vectors are ordered in step b) in ascending magnitude order for said selected parameter (*especially fourth page, section 3.1 Equal Width Interval Binning*).

9.25. Regarding claim 27, 51:

9.26. Black appears to teach:

9.26.1. means for eliminating redundant collected vectors, remaining said vectors forming said training set (*page 58.06, second paragraph that starts with, "The constructed datafile . . ."*);

9.26.2. a memory storing said training set (*page 58.06, second paragraph that starts with, "The constructed datafile . . ."*).

9.27. Regarding claim 31:

9.28. Black does not specifically teach:

9.28.1. the vector selector divides the range of said selected system parameter into bins having equal number of system snapshots.

9.29. Dougherty appears to teach:

**9.29.1.** the vector selector divides the range of said selected system parameter into bins having equal number of system snapshots (*second page, section 2 Related Work, first paragraph that starts with, "The simplest . . .", "A related method, Equal Frequency Intervals, divides a continuous variable into k bins where (given m instances) each bin contains m/k (possibly duplicated) adjacent values"*).

**10.** Claims 3, 5, 10, 25, 28, 35, 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black as modified by Dougherty as applied to claims 1, 4, 6, 8, 11, 12, 13, 14, 15, 17, 26, 27, 31, 32, 34, 36, 51 above, further in view of Gross (U.S. Patent Number 5,764,509).

**10.1.** Black as modified by Dougherty teaches a method of selecting input vectors for extraction of representative data for training of an adaptive model, as recited in claims 1, 4, 6, 8, 11, 12, 13, 14, 15, 17, 26, 27, 31, 32, 34, 36, 51 above.

**10.2.** The art of Gross is directed to an industrial surveillance system (title).

**10.3.** The art of Gross and the art of Black as modified by Dougherty are analogous art because they both pertain to the art of training of an adaptive model.

**10.4.** The motivation to use the art of Gross with the art of Black as modified by Dougherty would have been the benefit recited in Gross that the MiniMax module produces an "optimal" training set (*column 5, lines 52 - 67*).

**10.5.** Regarding claims 2, 9, 19, 20, 21, 33:

**10.6.** Black as modified by Dougherty does not specifically teach:

**10.6.1.** including for training the adaptive model each vector that contains a maximum or minimum value for any given sensor across the set of training vectors.

**10.7.** Gross appears to teach:

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10.7.1. including for training the adaptive model each vector that contains a maximum or minimum value for any given sensor across the set of training vectors (*column 5, lines 52 - 67*).

10.8. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Gross with the art of Black as modified by Dougherty to produce the claimed invention.

10.9. Regarding claims 3, 10, 50:

10.10. Black as modified by Dougherty does not specifically teach:

10.10.1. carrying out the ordering, dividing and selecting steps for each sensor represented in the set of training vectors.

10.11. Gross appears to teach:

10.11.1. carrying out the ordering, dividing and selecting steps for each sensor represented in the set of training vectors (*column 5, lines 52 - 67; since each sensor is processed to find the max and the min, it would have been obvious to carry out the steps for each sensor*).

10.12. Regarding claim 5, 35:

10.13. Black as modified by Dougherty does not specifically teach:

10.13.1. a vector is selected from one of the equally spaced ranges through the ordering by magnitude such that the selected vector is the vector with a sensor value highest within the range.

10.14. Gross appears to teach:

10.14.1. a vector is selected from one of the equally spaced ranges through the ordering by magnitude such that the selected vector is the vector with a sensor value highest within the range (*column 5, lines 52 - 67*).

**10.15. Regarding claim 25:**

**10.16. Black appears to teach:**

**10.16.1.** i) eliminating redundant selected vectors (page 58.06, second paragraph that starts with, "The constructed datafile . . ."); and

**10.16.2.** j) storing said selected vectors as a training set for modeling and monitoring system operation (page 58.06, second paragraph that starts with, "The constructed datafile . . .").

**10.17. Black does not specifically teach:**

**10.17.1.** checking system parameters to determine if other parameters remain unselected; if other parameters are determined to remain unselected,

**10.17.2.** g) selecting an unselected parameter, said unselected parameter being identified as the selected parameter;

**10.17.3.** h) returning to step c) and repeating steps c) through h) until all system parameters have been selected; otherwise,

**10.18. Gross appears to teach:**

**10.18.1.** checking system parameters to determine if other parameters remain unselected; if other parameters are determined to remain unselected (column 5, lines 52 - 67; since each sensor is processed to find the max and the min, it would have been obvious to carry out the steps for each sensor),

**10.18.2.** g) selecting an unselected parameter, said unselected parameter being identified as the selected parameter (column 5, lines 52 - 67; since each sensor is processed to find the max and the min, it would have been obvious to carry out the steps for each sensor);

**10.18.3.** h) returning to step c) and repeating steps c) through h) until all system parameters have been selected; otherwise (column 5, lines 52 - 67; since each sensor is processed to find the max and the min, it would have been obvious to carry out the steps for each sensor).

**10.19. Regarding claim 28:**

**10.20. Black does not specifically teach:**

**10.20.1.** the vector selector divides the range of said selected system parameter into a plurality of evenly spaced bins and selects a sorted snapshot from each bin as the selected vector, each said selected vector being identified as having a parameter value closest to a corresponding bin value.

**10.21. Dougherty appears to teach:**

**10.21.1.** the vector selector divides the range of said selected system parameter into a plurality of evenly spaced bins (*especially fourth page, section 3.1 Equal Width Interval Binning*) ~~and selects a sorted snapshot from each bin as the selected vector, each said selected vector being identified as having a parameter value closest to a corresponding bin value.~~

**10.22. Gross appears to teach:**

**10.22.1.** ~~the vector selector divides the range of said selected system parameter into a plurality of evenly spaced bins~~ and selects a sorted snapshot from each bin as the selected vector, each said selected vector being identified as having a parameter value closest to a corresponding bin value (*column 5, lines 52 - 67; the max is closest to a bin value; alternatively, Black teaches selecting a datapoint closest to the center on page 58.06, second paragraph, last sentence*).

**11. Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Black as modified by Dougherty as applied to claims **1, 4, 6, 8, 11, 12, 13, 14, 15, 17, 26, 27, 31, 32, 34, 36, 51** above, further in view of Vaidyanathan (U.S. Patent Number 6,941,287).

**11.1.** Black as modified by Dougherty teaches a method of selecting input vectors for extraction of representative data for training of an adaptive model, as recited in claims **1, 4, 6, 8, 11, 12, 13, 14, 15, 17, 26, 27, 31, 32, 34, 36, 51** above.

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**11.2.** The art of Vaidyanathan is directed to an empirical modeling system (title and abstract).

**11.3.** The art of Vaidyanathan and the art of Black as modified by Dougherty are analogous art because they both pertain to the art of training of an adaptive model.

**11.4.** The motivation to use the art of Vaidyanathan with the art of Black as modified by Dougherty would have been the benefit recited in Vaidyanathan that the method identifies the optimum representation of the data set (*column 1, lines 25 - 30*), which would have been recognized as a benefit by the ordinary artisan.

**11.5.** Regarding **claim 16**:

**11.6.** Black as modified by Dougherty does not specifically teach:

**11.6.1.** the bin number provided for dominant driver parameters is greater than the bin number used for all other parameters.

**11.7.** Vaidyanathan appears to teach:

**11.7.1.** the bin number provided for dominant driver parameters is greater than the bin number used for all other parameters (*column 7, lines 62 - 65, "Determining a subset of the feature data set that most accurately predicts system outputs from system inputs", and column 9, lines 50 - 67, and column 10, lines 1 - 55*).

**11.8.** Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Vaidyanathan with the art of Black as modified by Dougherty to produce the claimed invention.

**12. Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Black as modified by Dougherty as applied to claims **1, 4, 6, 8, 11, 12, 13, 14, 15, 17, 26, 27, 31, 32, 34, 36, 51** above, further in view of Hussain (F. Hussain et al., "Discretization: An Enabling Technique", June 1999, The National University of Singapore, pages 1 - 27).

**12.1.** Black as modified by Dougherty teaches a method of selecting input vectors for extraction of representative data for training of an adaptive model, as recited in claims 1, 4, 6, 8, 11, 12, 13, 14, 15, 17, 26, 27, 31, 32, 34, 36, 51 above.

**12.2.** The art of Hussain is directed to discretizing data, including training of an adaptive model (*title, abstract, and pages 1 – 2, section 1 Introduction*).

**12.3.** The art of Hussain and the art of Black as modified by Dougherty are analogous art because they both pertain to the art of training of an adaptive model.

**12.4.** The motivation to use the art of Hussain with the art of Black as modified by Dougherty would have been the benefit recited in Hussain that quick-sort is an efficient sorting algorithm (*page 4, section 3.2.1 Sorting*), which would have been recognized as a benefit by the ordinary artisan.

**12.5.** Regarding claim 18:

**12.6.** Black as modified by Dougherty does not specifically teach:

**12.6.1.** the said system vectors are ordered in step b) in descending magnitude order for said system selected parameter.

**12.7.** Hussain appears to teach:

**12.7.1.** the said system vectors are ordered in step b) in descending magnitude order for said system selected parameter (*page 4, section 3.2.1 Sorting*).

**12.8.** Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Hussain with the art of Black as modified by Dougherty to produce the claimed invention.

**13. Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply

as well. It is respectfully requested from the Applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. The entire reference is considered to provide disclosure relating to the claimed invention.

*Allowable Subject Matter*

**14.** Following is a statement of reasons for indicating allowable subject matter:

**15.** While Black ("System Modeling and Instrument Calibration Verification with a Nonlinear State Estimation Technique") teaches receiving signals as input from a plurality of sensors as a set of training vectors; and Dougherty ("Supervised and Unsupervised Discretization of Continuous Features") teaches ordering the set of training vectors according to a corresponding value in each vector of a particular sensor to form an ordinal count of vectors representing the 'x' dimension of the data; dividing the set of training vectors according to equally spaced ranges selected across the magnitude of the data, the magnitude forming the 'y' dimension of the data; selecting at least one vector from each of the equally spaced ranges for training the adaptive model; training the adaptive model with the vectors selected in the selecting step; ordering the training vectors so as to provide a cumulative density function for the particular sensor; neither of these references either alone or in combination with the prior art of record teaches a method of selecting input vectors for extraction of representative data for training of an adaptive model, specifically including:

**15.1.** Regarding claim 7, "a vector is selected from one of the equally spaced ranges through the cumulative density function such that the selected vector is the vector with a sensor value highest within the range", in combination with the remaining features and elements of the claimed invention;



**15.2.** Regarding claim 37, “a vector is selected from one of the equally spaced ranges through the cumulative density function such that the selected vector is the vector with a sensor value highest within the range”, in combination with the remaining features and elements of the claimed invention;

### *Conclusion*

**16.** The prior art made of record teaches knowledge of the ordinary artisan:

**16.1.** Aynur A. Dayanik et al., “Binning: Converting Numerical Classification into Text Classification”, June 2000, Seventeenth International Conference on Machine Learning, eight unnumbered pages; teaches binning and equal frequency splitting.

**16.2.** David B. Skalak, “Prototype and Feature Selection by Sampling and Random Mutation Hill Climbing Algorithms”, 1994, International Conference on Machine Learning, nine unnumbered pages; teaches methods of reducing the number of instances for nearest neighbor retrieval (first page, right-side column).

**16.3.** D. Randall Wilson et al., “Reduction Techniques for Instance-Based Learning Algorithms”, March 2000, Machine Learning, volume 38, number 3, pages 1 – 32; teaches methods of prototype or reference selection for nearest neighbor systems.

**16.4.** David B. Skalak, “Prototype Selection for Composite Nearest Neighbor Classifiers”, May 1997, University of Massachusetts Amherst, pages 1 – 259; teaches methods of prototype selection for nearest neighbor classifiers.

**17.** Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russ Guill whose telephone number is 571-272-7955. The examiner can normally be reached on Monday – Friday 9:00 AM – 5:30 PM.

**18.** If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Paul Rodrigues can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any

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inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group Receptionist: 571-272-2100.

19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Russ Guill

Examiner

Art Unit 2123

RG

/Paul L Rodriguez/

Supervisory Patent Examiner,

Art Unit 2123